REMARKS

In response to the Office Action mailed March 20, 2007, Applicants respectfully request reconsideration. Claims 27-50 were previously pending in this application. By this amendment, claims 27-50 have been amended. New claims 51 and 52 have been added. As a result, claims 27-52 are pending for examination with claims 27 and 50 being independent. No new matter has been added.

Double Patenting Rejection

The Office Action rejected claims 27-31, 36-41 and 44-49 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 and 13-16 of a co-pending Application No. 10/364,294 filed on February 10, 2003 in view of Gilbert et al. (7,123,670). Applicants have submitted herein a Terminal Disclaimer in compliance with 37 CFR § 1.321 to overcome the rejection.

Accordingly, withdrawal of this rejection is respectfully requested.

Objection to the Abstract

The Office Action objected to the abstract of the disclosure as not commencing on a separate sheet in accordance with 37 CFR 1.52(b)(4). Applicants have amended the abstract and have attached herein a replacement sheet with the corrected abstract thereon.

Accordingly, withdrawal of this objection is respectfully requested.

Objections to the Claims

The Office Action objected to claims 28-49 as containing informalities related to dependency of the dependent claims 28-49. Applicants have herein corrected the dependency of the claims.

Accordingly, withdrawal of this objection is respectfully requested.

Rejections under 35 U.S.C. §103

The Office Action rejected claims 27, 40, 47, 49 and 50 under 35 U.S.C. 103(a) as being unpatentable over Kim, world patent No. WO 00/77961 (Kim) in view of Dölle et al., U.S. Patent No. 6,674,817 (Dölle). Applicants respectfully disagree. In addition, Applicants have amended independent claims 27 and 50 to more clearly distinguish over the cited reference.

Claim 27, as amended, recites:

> A receiver for receiving a signal comprising a modulated carrier, with *a frame having a first and second training sequences*, comprising:
>
> a frequency offset estimation unit for receiving the signal and *obtaining initial information relating to a carrier frequency offset from an autocorrelation signal obtained by autocorrelation of the first training sequence of the received signal* and for *obtaining an estimate of the carrier frequency offset from the initial information and an autocorrelation signal obtained by autocorrelation of the second training sequence of the received signal*;
>
> a frequency offset compensation unit for compensating the received signal with the frequency offset obtained from the frequency offset estimation unit to form a compensated received signal, and
>
> a time reference determining unit for obtaining a timing reference for the received signal by cross-correlation of the compensated received signal with a known training sequence.
>
> (Emphasis added).

Kim is directed to achieving symbol timing and frequency synchronization in an orthogonal frequency division multiplexing (OFDM) system (page 1, lines 6-9). The Office Action concedes that Kim does not disclose an autocorrelation signal obtained by the first and second training sequence explicitly (page 9, lines 5-6). The Office Action alleges that Dölle discloses "an autocorrelation signal obtained by the first training sequence" and "for obtaining an estimate of a carrier frequency offset from an autocorrelation signal obtained by autocorrelation of the second training sequence of the received signal" (page 9, lines 7-10).

Dölle enables the use of very simple training sequences in data bursts of different types, whereby the training sequences of the different types can be constructed very similarly but still distinguishable on the receiver side, so that a distinction can be made between uplink and downlink traffic (col. 9, lines 55-60). To achieve the above, Dölle provides a communication device for transmitting and receiving control and user data bursts in a digital telecommunication system ..., which comprises receiving means for receiving data bursts including data bursts of a first type and data bursts of a second type different from said first type, *said first type bursts*

respectively comprising a first training sequence and *said second type bursts respectively comprising a second training sequence* (col. 2, lines 64-67 – col. 3, lines 1-5). In contrast, claim 27 describes receiving a signal comprising a modulated carrier, with a frame having *a first and second training sequence.* Dölle does not describe receiving a signal comprising both the first and second training sequences. Furthermore, Dölle does not describe a frequency offset estimation unit for receiving the signal and obtaining initial information relating to a carrier frequency offset from *an autocorrelation signal obtained by autocorrelation of the first training sequence of the received signal* and for obtaining an estimate of the carrier frequency offset from the initial information and *an autocorrelation signal obtained by autocorrelation of the second training sequence of the received signal*, as recited in claim 27.

Therefore, neither Kim nor Dölle describes or suggests "a receiver for receiving a signal comprising a modulated carrier, with a frame having a first and second training sequences, comprising: a frequency offset estimation unit for receiving the signal and obtaining initial information relating to a carrier frequency offset from an autocorrelation signal obtained by autocorrelation of the first training sequence of the received signal and for obtaining an estimate of the carrier frequency offset from the initial information and an autocorrelation signal obtained by autocorrelation of the second training sequence of the received signal; a frequency offset compensation unit for compensating the received signal with the frequency offset obtained from the frequency offset estimation unit to form a compensated received signal, and a time reference determining unit for obtaining a timing reference for the received signal by cross-correlation of the compensated received signal with a known training sequence," as recited in claim 27.

Accordingly, claim 27 patentably distinguishes over Kim and Dölle, either alone or in combination.

Claims 28-49 depend from claim 1 and are allowable for at least the same reasons.

Accordingly, withdrawal of the rejection of claims 27-49 is respectfully requested.

Claim 50, as amended, recites:

> A method for processing a received signal comprising a modulated carrier having *a frame with a first and second training sequences*, comprising:
>
> *obtaining initial information relating to a carrier frequency offset from an autocorrelation signal obtained by autocorrelation of the first training sequence of the received signal*;
>
> *obtaining an estimate of the carrier frequency offset from the initial information and an autocorrelation an autocorrelation signal obtained by*

autocorrelation of the second training sequence of the received signal;

compensating the received signal with the obtained estimate of the frequency offset to form a compensated received signal, and

obtaining a timing reference for the received signal by cross-correlation of the compensated received signal with a known training sequence.

(Emphasis added).

Neither Kim nor Dölle describes or suggests "a method for processing a received signal comprising a modulated carrier having a frame with first and second training sequences, comprising: obtaining initial information relating to a carrier frequency offset from an autocorrelation signal obtained by autocorrelation of the first training sequence of the received signal; obtaining an estimate of the carrier frequency offset from the initial information and an autocorrelation signal obtained by autocorrelation of the second training sequence of the received signal; compensating the received signal with the obtained estimate of the frequency offset to form a compensated received signal, and obtaining a timing reference for the received signal by cross-correlation of the compensated received signal with a known training sequence," as recited in claim 50.

Accordingly, claim 50 patentably distinguishes over Kim and Dölle, either alone or in combination.

Accordingly, withdrawal of the rejection of claim 50 is respectfully requested.

New claims

New claim 51 depends from claim 27 and is allowable based at least on its dependency.

New claim 52 depends from claim 50 and is allowable based at least on its dependency.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

By: _____

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